

# PATENT ABSTRACTS OF JAPAN

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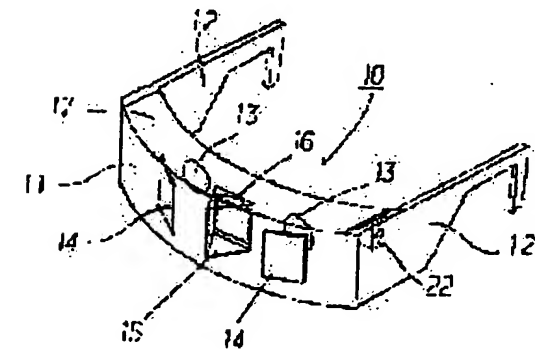
(72)Inventor : TOZAKI KENJI

## (54) SPECTACLE TYPE VIDEO DISPLAY DEVICE

### (57)Abstract:

PURPOSE: To place an image at a proper position in front of the eyes and make the image easy to see by improving the optical system of the spectacle type video display device which is put on the head like a pair of glasses to see the image.

CONSTITUTION: This device is provided with a square main body part 11 having a curved surface which is gentle along the front surface of the head part and temple parts 12 on both the sides of the main body part 11; and the main body part 11 is open at face-side positions of both the eyes and oculars 13 are provided at the opening parts. Mirrors 14 are provided at top-surface side positions in the main body part in front of both the eyes respectively and the reflecting surfaces of the mirrors 14 are directed so that the line of sight are reflected by the mirrors 14 to right beside the center face side in the main body part. In the center of the main body part 11, a prism in a isosceles triangular prism shape is provided vertically having



the base of the triangle on the face side, and the vertical angle of the isosceles triangular prism is equal to the angle at which the glances reflected by the mirrors 14 are transmitted through the isosceles surface of the prism 15, reflected by the opposite isosceles surface, and made incident on the base surface; and the video display surface of a small-sized video display part 16 is provided on the base surface of the triangle of the prism 15 while facing the prism 15.

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## CLAIMS

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[Claim(s)]

[Claim 1] A lug or \*\*\*\* is prepared in the both sides of the loose body section of the rectangular object of a curved surface, and this body section along the front face of a head. Opening of the both-eyes location by the side of the face of this body section is carried out, respectively, and an ocular is prepared in this opening, respectively. In the front-face side location of the body circles ahead of both eyes A mirror is prepared, respectively and the reflector of this mirror is turned in the direction which a look reflects in just beside [ central ] inside this body by this mirror. In the center of this body section It is the include angle which the prism of the 2 equilateral triangle pole carries out a triangular base, and installs and prepares it in a face side, the look reflected by said mirror penetrates the 2 grade edge surface of prism, reflects the include angle of the top-most vertices of this 2 equilateral triangle pole in the 2 grade edge surface of the opposite side, and carries out incidence to a bottom edge surface. The glasses mold graphic display device characterized by turning the graphic display side of the small graphic display section to prism, and coming to prepare it in the bottom edge surface of the triangle of this prism.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application] It is related with the glasses-type graphic display device which can see an image, applying it to a head like glasses.

[0002]

[Description of the Prior Art] Apply to a head like glasses, and it is arranged so that the light-emitting part of television may become JP,1-133479,A with the dead angle of both eyes as a display unit which can see an image. A trapezoid reflecting mirror long to the down side is arranged in the location which becomes the dead angle of both eyes, the television drawing which emitted light reflects it in it with this reflecting mirror, and it is reflected in a concave mirror, it is in this concave mirror, it arranges so that it may condense in both eyes exactly, and the vision equipment which attaches these in a head free [ attachment and detachment ] like the goggles of skiing is indicated.

[0003]

[Problem(s) to be Solved by the Invention] Although it is headphone type television with which a head can be equipped with above-mentioned vision equipment the television drawing which emitted light serves as a dead angle of both eyes, although it is exactly located among the both eyes before a nose, a concave mirror is made to reflect television drawing and a big image is seen by both eyes Even if there is no distance between both eyes and it expands an image with a concave mirror in the reflecting mirror of this width of face only by about 3cm, making it the magnitude which is visible by both eyes has unreasonableness. So, about this design, the optical system for graphic display is improved and the glasses mold graphic display device which makes an image a suitable location in sight and makes it legible is offered.

[0004]

### [Means for Solving the Problem]

- b) Form a lug or \*\*\*\* 12 and 12 in the both sides of the loose body section 11 of the rectangular object of a curved surface, and this body section 11 along the front face of a head.
  - b) Opening of the both-eyes location by the side of the face of the body section is carried out, respectively, and the ocular 16 is formed in this opening.
  - c) The rectangular mirrors 14 and 14 are formed in the front-face side location of the body circles ahead of both eyes, respectively, and turn the reflector of this mirror in the direction which a look reflects in just beside [ central ] inside this body by these mirrors 14 and 14.
  - d) The prism 15 of the 2 equilateral triangle pole makes a triangular base a face side, and installs and establishes it in the center of this body section 11. It is the include angle which the look reflected by said mirrors 14 and 14 penetrates the 2 grade edge surface of prism, reflects the include angle of the top-most vertices of this 2 equilateral triangle pole in the 2 grade edge surface of the opposite side, and carries out incidence to a bottom edge surface. The graphic display side of the small graphic display section 16 is turned to prism 15, and it comes to prepare it in the bottom edge surface of the triangle of HO this prism.
- It considered as the glasses mold graphic display device which consists of the above-mentioned configuration.

[0005]

[Function] the above-mentioned configuration \*\*\*\* operation -- stating -- he will look at each mirror which exists the look before it through an ocular, by this mirror, the observer who covered the glasses mold graphic display device makes prism reflect a look, will make the

bottom edge surface of prism reflect the look by this prism, and will look at the image of the graphic display section with both eyes.

[0006]

[Example] Drawing 1 is the busy condition Fig. of the glasses mold graphic display device of this invention. In use of the glasses mold graphic display device 10, it applies to the face section 1 of the body like glasses. And the television tuner 20 and the dc-battery box 30 are attached in the belt 2 of the lumbar part, and it connects with the glasses mold graphic display device 10 by connecting cords 21 and 31, respectively. It is the glasses mold graphic display device 10 by this, and the image from the television tuner 20 can be observed.

[0007] Drawing 2 is the perspective view of a glasses mold graphic display device. Drawing 3 is the top view of the optical system of a glasses mold graphic display device.

[0008] As for the glasses mold graphic display device 10, a lug or \*\*\*\* 12 and 12 is attached in the both sides of the loose body section 11 of the rectangular object of a curved surface, and this body section 11 along the front face of a head. Opening of the both-eyes location equivalent to the side of the face of the rear face of the body section is carried out, respectively, and oculars 13 and 13 are formed in this opening. The rectangular mirrors 14 and 14 are formed in the front-face side location of the body circles ahead of both eyes, respectively, and the reflector of this mirror is installed in it at the include angle of 45 abbreviation seen from the flat surface so that the look which looks at a transverse plane may reflect in the central just beside direction of these body circles by these mirrors 14 and 14. The look which the prism 15 of the 2 equilateral triangle pole made the triangular base the face side, was set up, and was reflected by said mirrors 14 and 14 penetrates the 2 grade edge surface of prism in the center of the body section 11, reflects in it in the 2 grade edge surface of the opposite side, and incidence is carried out to a bottom edge surface. The small graphic display section 16 which consists of LCD (liquid crystal display) turns the screen to prism, and is attached in the bottom edge surface of this prism 15.

[0009] The observer who covered the glasses mold graphic display device 10 by the configuration of the above-mentioned optical system Each mirror 14 and 14 which exists the look before it through oculars 13 and 13 will be seen. By these mirrors 14 and 14, incidence of the look is carried out to the 2 grade edge surface of prism 15, in this prism 15, the bottom edge surface of prism will be made to reflect the look by the 2 grade edge surface of the opposite side, and the image of the graphic display section 16 prepared in the bottom edge surface of this prism will be seen with both eyes.

[0010] In drawing 1, the drive circuit board 17 for making the top face of the body section 11 drive the graphic display section 16 is arranged, the tuner jack 22 and the dc-battery jack 32 are formed in right and left of body anterior part, respectively, and it connects with the drive circuit board 17.

[0011] Although not furthermore illustrated, an earphone is formed and you may enable it to hear a sound. In addition, if it enables it to be able to keep seeing body section 11 front face by using mirrors 14 and 14 as the half mirror, since an external scene can also be seen looking at the image reflected in the graphic display section 16, an image can be seen even with a walk. Moreover, a Fresnel lens is sufficient as an ocular 12. It is also possible to enjoy a game image for the television tuner 20 as a body of a portable video game machine in use of this glasses mold graphic display device 10. It is also possible to build a video game machine into this glasses mold graphic display device itself furthermore.

[0012]

[Effect of the Invention] As explained above, the glasses mold graphic display device of this design can equip an observer like glasses, being able to cover a body. Since the image which graphic display is made to have been reflected ahead of the eye, and was reflected in the graphic display section is reflected twice, it becomes the erection image instead of an image

which also reversed the image included in an observer's eye. Since a look can furthermore be used as a transverse plane reasonable with both eyes and an image can be seen, it is rare for an eye to get tired. Therefore, the optical system for graphic display is improved, and an image is made into a suitable location in sight, and is made legible.

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## TECHNICAL FIELD

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[Industrial Application] It is related with the glasses-type graphic display device which can see an image, applying it to a head like glasses.

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## PRIOR ART

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[Description of the Prior Art] Apply to a head like glasses and the light-emitting part of television should become JP,1-133479,A with the dead angle of both eyes as a display unit which can see an image. A trapezoid reflecting mirror long to the down side is arranged in the location which becomes into the dead angle of both eyes, the television drawing which emitted light reflects it in it with this reflecting mirror, and it is reflected in a concave mirror, it is arranged, it is in this concave mirror, it arranges so that it may condense in both eyes exactly, and the vision equipment which attaches these in a head free [ attachment and detachment ] like the goggles of skiing is indicated.

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## EFFECT OF THE INVENTION

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[Effect of the Invention] As explained above, the glasses mold graphic display device of this design can equip an observer like glasses, being able to cover a body. Since the image which graphic display is made to have been reflected ahead of the eye, and was reflected in the graphic display section is reflected twice, it becomes the erection image instead of an image which also reversed the image included in an observer's eye. Since a look can furthermore be used as a transverse plane reasonable with both eyes and an image can be seen, it is rare for an eye to get tired. Therefore, the optical system for graphic display is improved, and an image is made into a suitable location in sight, and is made legible.

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## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] Although it is headphone type television with which a head can be equipped with above-mentioned vision equipment the television drawing which emitted light serves as a dead angle of both eyes, although it is exactly located among the both eyes before a nose, a concave mirror is made to reflect television drawing and a big image is seen by both eyes Even if there is no distance between both eyes and it expands an image with a concave mirror in the reflecting mirror of this width of face only by about 3cm, making it the magnitude which is visible by both eyes has unreasonableness. So, about this design, the optical system for graphic display is improved and the glasses mold graphic display device which makes an image a suitable location in sight and makes it legible is offered.

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## MEANS

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[Means for Solving the Problem]

- b) Form a lug or \*\*\*\* 12 and 12 in the both sides of the loose body section 11 of the rectangular object of a curved surface, and this body section 11 along the front face of a head.
  - b) Opening of the both-eyes location by the side of the face of the body section is carried out, respectively, and the ocular 16 is formed in this opening.
  - c) The rectangular mirrors 14 and 14 are formed in the front-face side location of the body circles ahead of both eyes, respectively, and turn the reflector of this mirror in the direction which a look reflects in just beside [ central ] inside this body by these mirrors 14 and 14.
  - d) The prism 15 of the 2 equilateral triangle pole makes a triangular base a face side, and installs and establishes it in the center of this body section 11. It is the include angle which the look reflected by said mirrors 14 and 14 penetrates the 2 grade edge surface of prism, reflects the include angle of the top-most vertices of this 2 equilateral triangle pole in the 2 grade edge surface of the opposite side, and carries out incidence to a bottom edge surface. The graphic display side of the small graphic display section 16 is turned to prism 15, and it comes to prepare it in the bottom edge surface of the triangle of HO this prism.
- It considered as the glasses mold graphic display device which consists of the above-mentioned configuration.

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## OPERATION

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[Function] the above-mentioned configuration \*\*\*\* operation -- stating -- he will look at each mirror which exists the look before it through an ocular, by this mirror, the observer who covered the glasses mold graphic display device makes prism reflect a look, will make the bottom edge surface of prism reflect the look by this prism, and will look at the image of the graphic display section with both eyes.

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## EXAMPLE

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[Example] Drawing 1 is the busy condition Fig. of the glasses mold graphic display device of this invention. In use of the glasses mold graphic display device 10, it applies to the face section 1 of the body like glasses. And the television tuner 20 and the dc-battery box 30 are attached in the belt 2 of the lumbar part, and it connects with the glasses mold graphic display device 10 by connecting cords 21 and 31, respectively. It is the glasses mold graphic display device 10 by this, and the image from the television tuner 20 can be observed.

[0007] Drawing 2 is the perspective view of a glasses mold graphic display device. Drawing 3 is the top view of the optical system of a glasses mold graphic display device.

[0008] As for the glasses mold graphic display device 10, a lug or \*\*\*\* 12 and 12 is attached in the both sides of the loose body section 11 of the rectangular object of a curved surface, and this body section 11 along the front face of a head. Opening of the both-eyes location equivalent to the side of the face of the rear face of the body section is carried out, respectively, and oculars 13 and 13 are formed in this opening. The rectangular mirrors 14 and 14 are formed in the front-face side location of the body circles ahead of both eyes, respectively, and the reflector of this mirror is installed in it at the include angle of 45

abbreviation seen from the flat surface so that the look which looks at a transverse plane may reflect in the central just beside direction of these body circles by these mirrors 14 and 14. The look which the prism 15 of the 2 equilateral triangle pole made the triangular base the face side, was set up, and was reflected by said mirrors 14 and 14 penetrates the 2 grade edge surface of prism in the center of the body section 11, reflects in it in the 2 grade edge surface of the opposite side, and incidence is carried out to a bottom edge surface. The small graphic display section 16 which consists of LCD (liquid crystal display) turns the screen to prism, and is attached in the bottom edge surface of this prism 15.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the busy condition Fig. of the glasses mold graphic display device of this invention.

[Drawing 2] It is the perspective view of a glasses mold graphic display device.

[Drawing 3] It is the plane configuration Fig. of optical system.

[Description of Notations]

- 1 -- The face section of the body
- 2 -- Belt
- 10 -- Glasses mold graphic display device
- 11 -- Body section
- 12 -- A lug or \*\*\*\*
- 13 -- Ocular
- 14 -- Mirror
- 15 -- Prism
- 16 -- Graphic display section
- 17 -- Drive circuit board

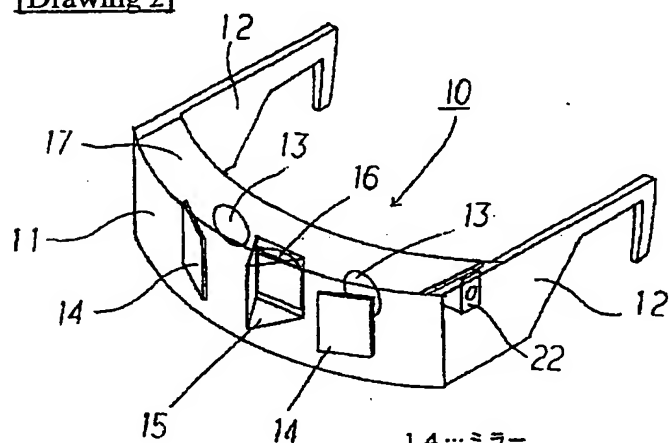
- 20 -- Television tuner
- 22 -- Tuner jack
- 30 -- Dc-battery box
- 32 -- Dc-battery jack

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## DRAWINGS

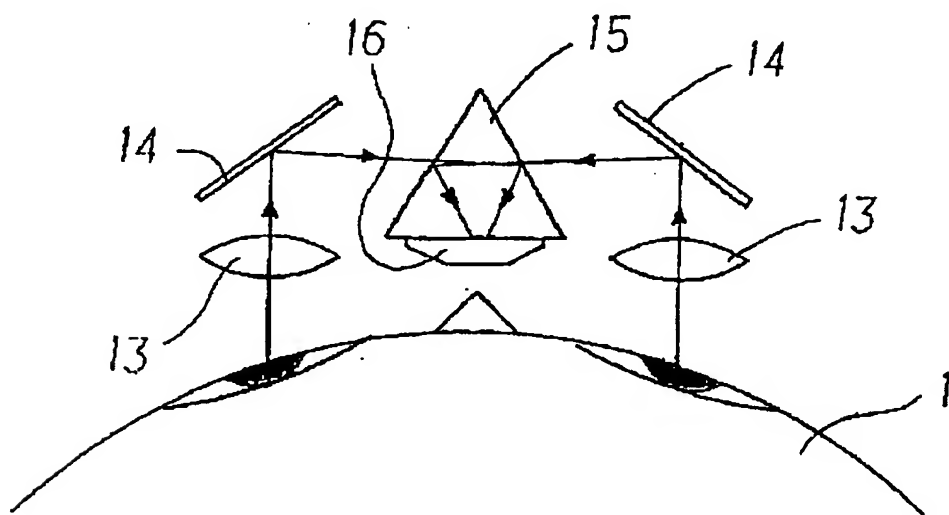
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[Drawing 2]



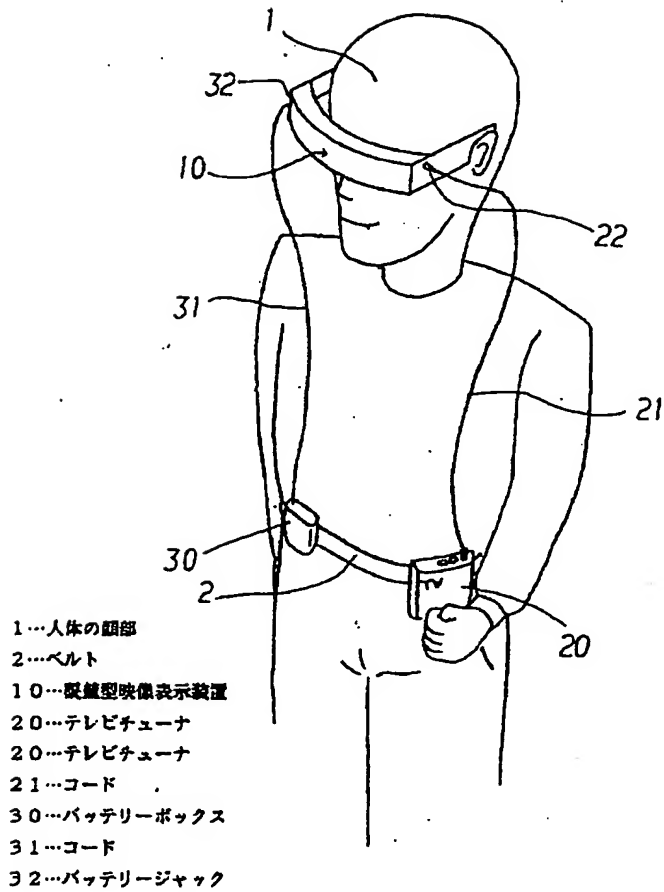
- |                |               |
|----------------|---------------|
| 10...眼鏡型映像表示装置 | 14...ミラー      |
| 11...本体部       | 15...プリズム     |
| 12...耳かけ部      | 16...映像表示部    |
| 13...接眼レンズ     | 17...駆動回路基板   |
|                | 22...チューナジャック |

[Drawing 3]





**[Drawing 1]**



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